

HIGHER ED

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SCHOOL-LEAVERS

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Essence of innovative teaching

ONE of the key purposes of tertiary education today is to generate holistic graduates who can compete globally and be ready to take on challenges brought about by the Industrial Revolution 4.0 (IR 4.0) which is affecting the jobs sphere by creating new knowledge and skills requirement.

Hence, the student experience at higher education institutions must facilitate the opportunity to learn in innovative ways that are engaging, enabling undergraduates to reach their full potential and develop skills that will help them thrive in the future.

At the Education Minister's Special Award Ceremony: Innovative Curriculum Design and Delivery 2018 (AKRI 2018) last month, Dr Maszlee Malik said lecturers should be dynamic and adapt to changes, yet hold on to the basic concepts of higher education.

And there must be a culture of innovation in the profession of lecturers to diversify teaching and learning methods.

Associate Professor Dr Wan Zuhainis Saad, a lecturer who has been teaching biotechnology and molecular science at Universiti Putra Malaysia (UPM) for the past 11 years and is currently seconded to the Department of Higher Education, Ministry of Education as academic development management division director, believes in empowering learners, learning by doing and experiential learning.

"Students nowadays who are from Generation Z (born between the mid-1990s and the early 2000s) are different from those in other generations. They want to be involved, and have freedom to speak their own mind in their learning experience.

"As an educator, we need to create that opportunity for them to unleash their creative potential, skills and innovation. We need to design the learning activities which help students to identify their capabilities, strengths and weaknesses, and this will not happen if learning only takes place at lectures in a conventional classroom setting.

"We should take the advantages of the great things technology can bring that may not have been possible previously," said the recipient for Teaching award under the Pure Science Cluster category at the 12th National Academic Awards last year.

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Universities must practise innovative teaching.

Spurring active learning

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So, what is innovative teaching at university and what shape does it come in?

Associate Professor Dr Fauziah Abdul Rahim, dean of Universiti Utara Malaysia's School of Education and Modern Languages, said essentially teaching at any level needs the same basic ingredient — it has to be learner- and learning-centred, it needs to be meaningful.

It also requires designing tasks and activities that engage learners to become involved in the thinking and learning process as well as learn in a collaborative way and, above all, have lots of fun. In her view, this is the essence of designing for learning to take place at university. Innovation depends on the creativity of the teacher, taking into consideration the needs and learner diversity.

"So the flipped classroom where learners can do tasks inside and outside of class via technology and the use of various learning tools can assist teachers to provide engaging learning experiences," she added.

The National Academic Awards award winner for Teaching (Applied Arts and Social Science Category) noted that current and future generations of university students cannot be separated from technology and have a shorter attention span perhaps due to the fact that they love to share their experiences, work in a flexible way and thrive on challenges.

"To get them onboard in class, teachers at the university need to be equipped with the know-how of integrating technology and interactive learning in class."

Challenges for faculty members at tertiary level occur when they are required to be involved in research and publication, and the emphasis on these activities can sometimes be overwhelming for academicians when designing innovative and meaningful teaching at the tertiary level that sometimes results in the traditional lecture becoming inevitable.

"Universities should place greater emphasis on the importance of ensuring that academicians become motivated to make innovative teaching central to their teaching and learning processes."

On innovative teaching in the fields of applied literature and social science for example, Fauziah uses learner-centred strategies that require students to take ownership of their learning when solving problems in various ways.

This is especially critical as her students are from the education programmes, who ultimately, she hopes, will become innovative teachers in their respective contexts when they graduate.

"While ensuring that the learning outcomes of the courses are achieved, there is also an effort made to prepare students to face the obstacles and challenges in the real world contexts of teaching."

"This is done through activities such as solving case studies which enable students to put theory into practice in a meaningful way. That way it helps students to prepare themselves before they set foot in the real world."

"I am humbled and pleased when former students tell me that the tasks that they performed at university and knowledge as well as skills they acquired when attending class are relevant to them as teachers. The feedback motivates me to do more even if it is not easy. After all mediating learning is never easy."



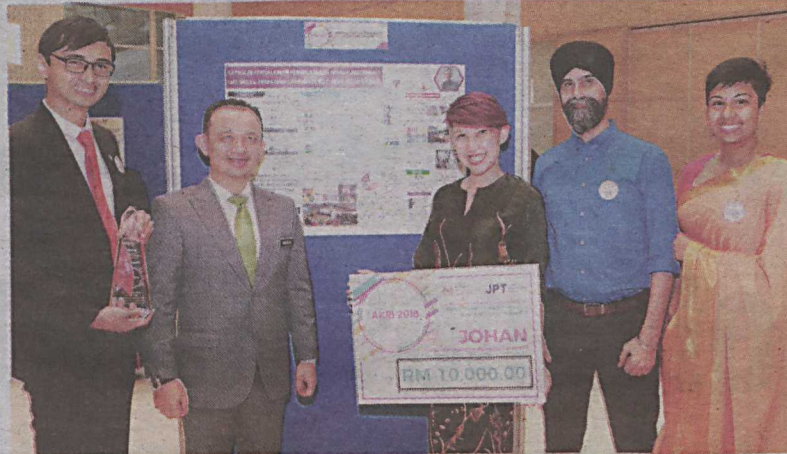
Fauziah Abdul Rahim



Faridah Mohamad



Dr Ismail Mohd Saiboon



Life Skills Facilitators at Taylor's University pose with Dr Maszlee Malik and Janaronson Nagarajah (left) after being named the winner for the Face-to-Face Immersive Learning Experience category at AKRI 2018.



Our enthusiasm and passion for learning should be infectious.

WAN ZUHAINIS SAAD
UPM microbiology lecturer

On teaching strategies in teaching pure science subjects, UPM microbiology lecturer Associate Professor Dr Wan Zuhainis Saad said it is all about curiosity, exploration and relationship.

"We need to deliver content in a manner that will spike students' curiosity, pique interest and allow them to see things differently. I practise BYOD (Bring Your Own Device). Students come in with their own gadgets, smartphones, laptops or iPads. They come prepared because they know they need to participate in activities prepared for them by me or their classmates. I don't have to worry about attendance because they won't miss my classes. It is an active learning environment," she said, adding that active learning promotes innovation and creativity.

"I have activities for each lecture, lots of formative assessment, interaction, participation, engagement and group work. Students have the freedom to contribute ideas and suggestions, interact and be engaged. In the words of Einstein, I don't teach my students, I just attempt to create the environment in which they can learn."

Wan Zuhainis practises blended learning using flipped classroom with Web 2.0 tools. The learning materials are prepared earlier with interactive video quizzes using EdPuzzle. The tasks are distributed among the groups of students who will prepare the learning materials for a particular topic for the whole class.

"You'll be amazed at what they can do. I use Project Oriented Based Learning. A project designed for students encompasses the content for a semester. We discuss progress and problems, and share ideas. Usually there are big events such as Mini Showcase of Microbial Ecology where students form the organising committee and Virtual Microbes, a virtual peer-learning project to learn about microbes with students from eight universities, including Lafayette College in the United States. It not only teaches others, students also learn best by doing and experiential learning," she said.

"As a 21st century educator and a learning designer, we have to be ready to learn, unlearn and relearn. Learning takes place in many different circumstances and contexts, and it is a process that never ends. Our enthusiasm and passion for learning should be infectious."

LEARNING LIFESKILLS

Taylor's University Face-to-Face Immersive Learning Experience project, which won an award in the category at AKRI 2018 last month, goes back to 2014 when the university launched the Shine

Award programme to enable students to develop their life skills aptitude, which will see them improve their lifelong life skills and emotional well-being capabilities.

It is the implementation of two subjects — Life Skills for Success and Well-Being and Millennials in Malaysia: Team Dynamics and Relationship Management — targeted at helping students focus on developing themselves to be emotionally intelligent and be able to interact with others.

Janaronson Nagarajah, who is associate director of Integrated Teaching and Lifelong Learning Center at Taylor's, said: "This innovative approach to education was the brainchild of the deputy vice-chancellor and chief academic officer, Professor Dr Pradeep Nair, who saw the merit in introducing this after industry leaders shared how they assess emotional intelligence when hiring graduates."

A specialised team, called Life Skills Coaches/Facilitators who come from various backgrounds, was appointed to look into this aspect of learning. Life Skills Facilitators, which include certified coaches, clinical psychologists, humanitarians and corporate trainers, deliver life skills modules to all first-year students, providing them the chance to enter a journey of self-discovery, learning foundational life skills, emotional intelligence and tools that help with emotional well-being.

"While this was first introduced as an option, the programme garnered positive response from students which led to the establishment of a more comprehensive framework introduced as part of the Taylor's Curriculum Framework launched last year."

"It's a new approach to learning and all students in the diploma and degree programmes are enrolled in these two modules in their first year, regardless of their course of study."

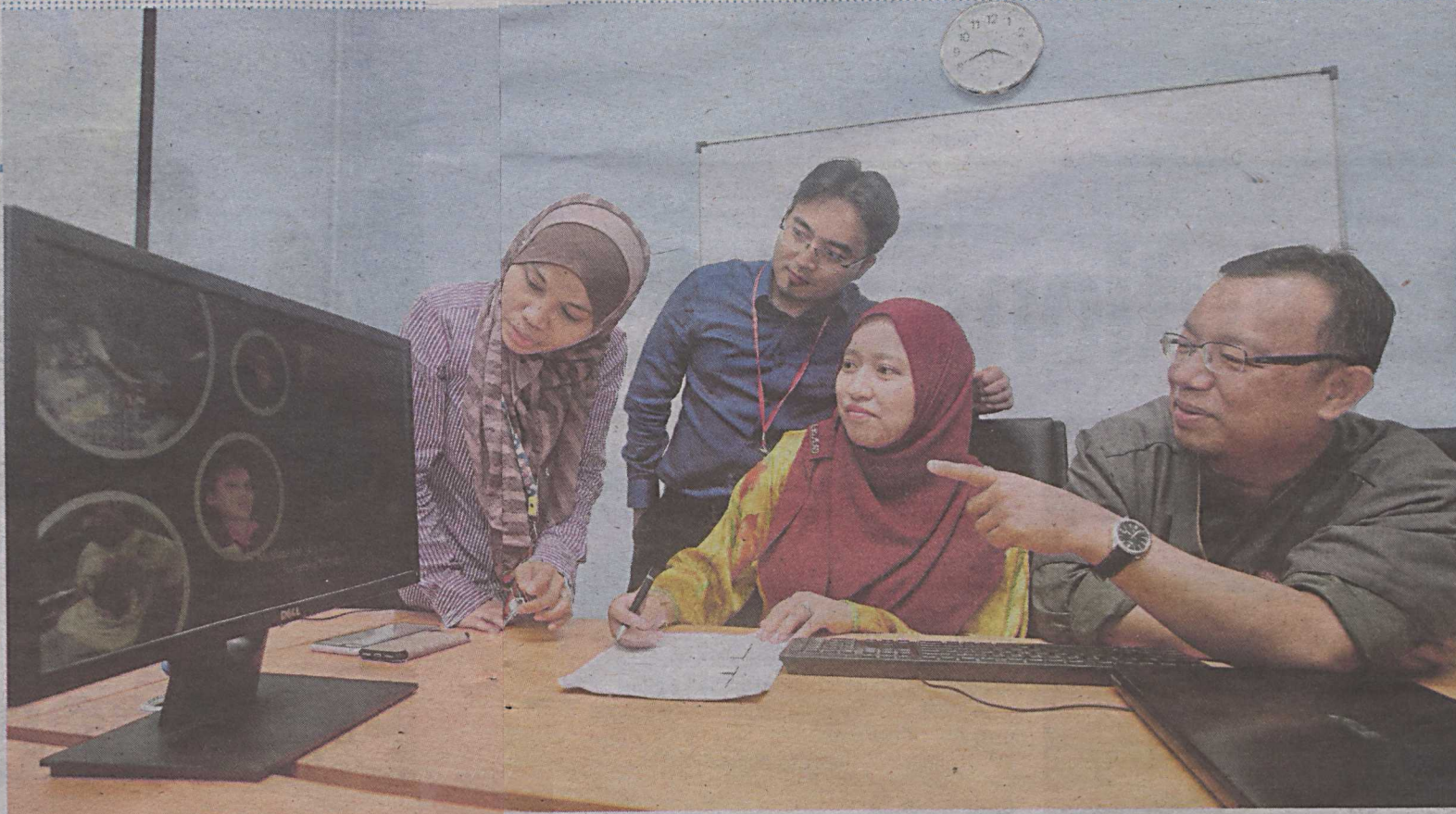
After completing the two modules at the end of the semester, students have the opportunity to go through a self-discovery process and know how to thrive in a team setting, give neutral responses and behave in a team.

"This is important because research has indicated that the workforce of the future will work across different teams, in different sectors and span cultures."

The initiative has garnered positive response, with close to 90 per cent of students sharing that they found the two modules helpful and provided them the platform to safely develop emotional well-being in a positive manner. "Our team has been approached by an industry partner who recognises the impact of this initiative and wants a custom-made 10-week module for its scholars."

As educators, Janaronson added, it is necessary to be innovative as it will allow instructors/lecturers to remain relevant to the needs of students.

"The Life Skills modules provide a platform for its facilitators to constantly enhance the way



The UKM Faculty of Medicine E-MERS team discussing the finer details of Immersive Hybrid Simulation session targeted at final-year medical students.

WINNERS OF EDUCATION MINISTER'S SPECIAL AWARD: INNOVATIVE CURRICULUM DESIGN AND DELIVERY 2018

Award Category	Initiative	Winner
Virtual Immersive Learning Experience	Integrasi Kursus Berasaskan Kemahiran Dengan Teknik "MOOC in MOOC" Melalui Model Rekabentuk Edutainment Kepada Pembelajaran Berteraskan E-Projek	Universiti Malaysia Kelantan Group Leader: Dr. Anuar Bin Mohd Yusof
Blended Immersive Learning Experience	Education 4.0: Teaching Principles Of Disaster Response To Undergraduate Medical Students Through Blended Learning With Multi-Modal Web-Application And Immersive Hybrids Simulation	Universiti Kebangsaan Malaysia Group leader: Professor Dr. Ismail Mohd Saibon
Face-to-Face Immersive Learning Experience	University Life Skills: Preparing Graduates to Thrive in The 4th IR	Taylor's University Group Leader: Janaronson Nagarajah
Transformative Teaching Without Lectures	Dichotomie Le Toys: Satu Kaedah Penggunaan Haiwan Mainan Plastik Dalam Meningkatkan Kemahiran Pembinaan Kekunci Dikotomi Pengelasan Haiwan Di Kalangan Pelajar	Universiti Malaysia Terengganu Dr Faridah Mohamad
Innovative Studies Programme Curriculum	Future Education in Malaysian Arts In Institution	Universiti Teknologi MARA Group leader: Datuk Professor Dr A. Razak Mohaideen

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they engage with students and prepare them to be future-ready."

ACTIVITY-BASED

Universiti Malaysia Terengganu biodiversity lecturer Associate Professor Dr Faridah Mohamad said Transformative Teaching Without Lectures is a new approach to lessons on "building and using a dichotomous key" for first-year biodiversity students.

These skills, she said, are crucial for biodiversity graduates who will bear the responsibility of exploring and safeguarding mega-biodiversity that require skills in the classification of organisms, which involve building and using a dichotomous key.

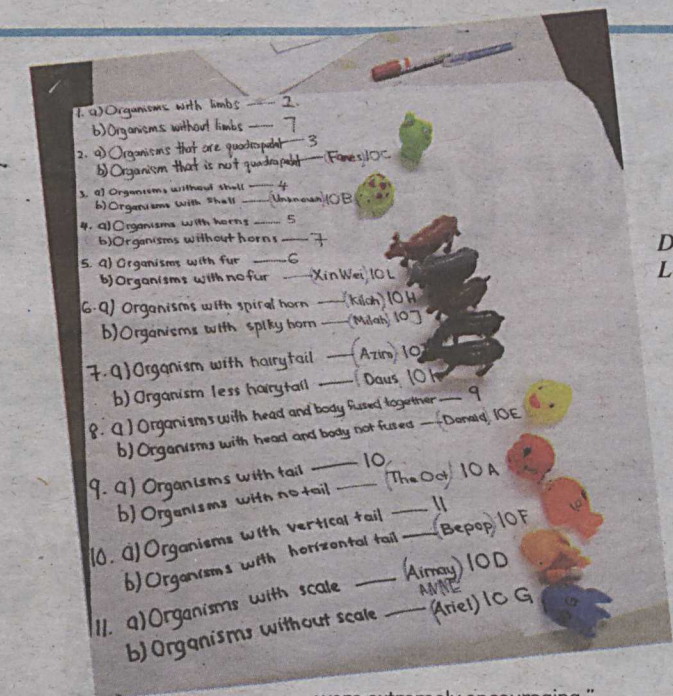
"We noticed that the majority of final-year students failed to demonstrate good knowledge and skill in the identification and description of species when they presented their final-year project,

despite have been taught these lesson and skills in the first year.

"So I thought of changing the way lessons are taught while retaining learning outcomes. The only change is the delivery of the course, from lecture-based to activity-based, where students take charge of their own learning by applying active learning in class," added Faridah.

The original course involved lecture and practical sessions. Faridah selected the most basic original practical module where students were taught to classify lab apparatus and stationery into their own classes.

"This is the basis of organism classification. I expanded this module to become the focus of my teaching. But instead of using those materials, I changed them to all sorts of lovely coloured, cute toys. The process of remodelling the module and crafting the activities took me quite some time but it's all worth it when comments from students



Dichotomie Le Toys

were extremely encouraging."

Under Dichotomie Le Toys, a two- to three-hour activity is carried out in a group of five without any prior lecture on the topic. The students further apply their understanding of the practical sessions using real plant and animal specimens as well as various published taxonomic keys available.

The activity is done on the basis of active learning where students take charge of their own learning through learning-by-doing, peers, collaborative and self-determined learning.

Each group is given a task to classify a set of 12-13 plastic toys of all sorts according to their creativity. While trying to complete the task, they list the problems they face, compare and discuss with the class facilitated by the lecturer. The importance of having a system to simplify the classification process is highlighted, followed by the introduction of Dichotomous Key terminology.

Each group member is then instructed to read an article of his choice from the Internet, share with the others and build a correct dichotomous key of the toys.

"We started this new approach in 2017, and the students are now in their final year. Spontaneous interviews carried out by my colleague with some of them revealed that they retain the knowledge and skills they gained from Dichotomie Le Toys, and apply them to their final-year projects involving birds, bats, fish and plants.

"This is precisely what we want from them — being able to apply basic skills taught during their studies to real work situations. It was not happening at the rate we wanted before Dichotomie Le Toys," added Faridah.

Tests done on students gave evidence of correct understanding of the concept and indicated their competence in using the dichotomous key to identify organisms and building the key to classify them.

"We are working towards better teaching deliveries, especially on topics or subjects that we identify needs to be refreshed. How do we know this? We have students' grades as indicators, and we have their comments to reflect on. These will tell us whether or not they have attained the intended outcomes."

EFFECTIVE SIMULATIONS

Having introduced Disaster Response Medicine as a submodule under Emergency Medicine to the medical undergraduate curriculum at Universiti Kebangsaan Malaysia (UKM), lecturers of the Department of Emergency soon found the student contact allocation of an one-hour lecture for final-year students inadequate to impart the principles of disaster response medicine and information for accompanying field experience.

UKM Medical Centre senior consultant emergency physician Professor Dr Ismail Mohd Saiboon, who is also a healthcare simulationist educator and deputy dean of Graduate Studies at UKM's Faculty

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Tapping into virtual reality

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of Medicine, said: "We had one hour of lecture followed by a simulation exercise where we put students through role play in the field. The whole affair is labour-intensive with 50 students undergoing the simulation physically either in the ward or an open space each time.

"And as there were 280 students in the batch, we had to carry out this simulation five to six times each year. While this disrupted daily operations in the faculty, there was also no guarantee students would come away with complete knowledge on the overall principles of disaster response medicine as they were stuck with only one role on only one aspect of disaster response medicine during the simulation session."

So together with six lecturers, he formed a seven-strong Emergency-Medical Education Research in Simulation (E-MERS) Team to review the teaching of the submodule.

The team came up with a blended immersive learning experience and teaching and learning approach using blended learning with multi-modal web-application and immersive hybrid simulation.

Before face-to-face interaction, students access a lecture video through a

screencast application which they can rewind and repeat as they see fit. An online discussion ensues for students to put forth questions and request for clarification from the lecturer via Padlet, an interactive platform which allows everyone to join in.

After that students have face-to-face interaction with the lecturer to delve in-depth into the topic after which a post-classroom task is given in preparation for a hands-on experience via immersive hybrid simulation.

For this simulation, students are exposed to a pre-recorded audio-visual trigger of an emergency — a vehicle accident or natural disaster — coupled with actual role play by students taking on roles such as victims or medical personnel on stage in a lecture theatre hall. Students in the audience also observe the scene.

"The victims are done up in moulage, the art of applying mock injuries for the purpose of training emergency response teams and other medical and military personnel. Those taking on the roles of medical officers make decision on action or treatment to be taken; they apply treatment principle, critical thinking and decision-making.



Dr Ismail Mohd Saiboon engaging with final-year students before a lecture on Disaster Response Medicine.

"When the session is over, we perform formative assessment on site with students giving their responses to questions on what they have seen through an audience response system. We can see their answers straightaway and interact on why they derived the answers. Students enjoy the experience and the process is a good way to ensure understanding of the topic and clear doubts quickly," said Dr Ismail, adding that the approach has proven to be highly effective.

The E-MERS team is looking into putting the initiative into the virtual reality platform with the help of a vendor.

"Virtual reality is a good platform to learn procedural medical techniques such as intubation, putting in intravenous lines

as the experience is objective and standard for medical students. As it is, not all medical students get hands-on experience in the wards or surgery, some only get to observe. With virtual reality and simulation, this will no longer be an issue."

Dr Ismail is helping the Medical Faculty to come up with a massive open online course for medicine that will allow anyone anywhere to learn.

"This will be ideal for those interested in medicine but are not able to attend medical schools, to learn remotely. But, of course, becoming doctors is a totally different matter because it includes skills development which can be done at a simulation centre and apprenticeship with a doctor at a participating hospital."